

**ANALYSIS OF THE EFFECT OF AGE AND BODY MASS INDEX (BMI)
ON THE ENERGY EXPENDITURE OF WORKERS IN THE PRODUCT
PACKING AREA AT PT. MANNASATRIA KUSUMAJAYA PERKASA**

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Abstract

In PT. Mannasatria Kusumajaya Perkasa, the amount of output produced by workers varies and it has not been found whether there is any impact between age, BMI, working hours, and type of work on the worker's energy expenditure. This study aims to determine the effect of the four factors on energy expenditure both simultaneously and individually, and to determine the relationship of energy expenditure to the amount of output produced by workers.

The study was conducted on the entire population of first shift's conveyor and sealer machine workers, totaling 96 workers. The method used were interviews, observations, and direct measurements using a smartwatch. The tests conducted were the classical assumption test (linearity test, heteroscedasticity test, multicollinearity test, and normality test) and statistical hypothesis test (F-test, T-test, and coefficient of determination (R^2) based on multiple linear regression analysis).

The result shows that age, BMI, working hours, and type of work simultaneously affect energy expenditure. However, only BMI, working hours at 10.00 – 11.00, and type of work that partially have a significant effect on energy expenditure. The result of R^2 shows that 28,8% of the variation in worker's energy expenditure is explained by age, BMI, working hours, and type of work. The result of the follow-up T-test shows that energy expenditure has a significant effect on the amount of output produced.

Keywords: energy expenditure, age, BMI, working hours, type of work, amount of output, dummy variable